Before the
Federal Communications Commission
Washington, D.C. 20554

In the matter of	)	
	)	
The Development of	)	
Operational, Technical	)	
and Spectrum Requirements	)	
For Meeting Federal, State	)	WT Docket No. 96-86
and Local Public Safety	)	
Agency Communication	)	
Requirements Through the	)	
Year 2010	)	
	)	
Establishment of Rules	)	
and Requirements For	)	
Priority Access Service	)	

COMMENTS ON THE SECOND NOTICE OF PROPOSED RULEMAKING
SUBMITTED BY
THE ASSOCIATION FOR MAXIMUM SERVICE TELEVISION, INC.
AND THE NATIONAL ASSOCIATION OF BROADCASTERS

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SUMMARY

The 746-806 MHz band may be shared productively by broadcasters and public safety agencies only if there are adequate technical interference protection standards that prevent mutually destructive interference and a loss of free-over-the-air television service. There are a number of steps the Commission should take to facilitate sharing of the 746-806 MHz band through the transition to digital television.

First, the current protection criteria for UHF-TV and land mobile services in the 470-512 MHz band provide a sound benchmark for protecting the analog broadcasting service in the 746-806 MHz band, with the exception of stations whose authorized facilities have a Grade B contour more than 55 miles out. These stations must be protected from interference as well. In the mid-1980s, the Commission carefully considered reducing protection criteria between UHF-TV and land mobile, but has not changed its rules. Current and anticipated needs through the transition to digital television do not justify reducing protection now. In fact, additional protection is necessary to meet the needs of UHF-TV and the potential implementation of new technologies for public safety.

Second, there are insufficient data to set interference protection standards for digital television. The Commission should create a committee of all interested parties that would gather data and make recommendations. This committee's work should be of limited duration. Only after adequate study should rules be put in place.

Third, the Commission should implement incentives to maximize the efficiency of the spectrum used for public safety. These incentives could take any of a variety of forms, and are particularly necessary in major metropolitan areas. Absent

incentives, the Commission will be called on unnecessarily to reallocate spectrum to public safety agencies in the future.

Finally, the Commission should require users of the shared spectrum on the 746-806 MHz band to keep each other informed of new services and technologies that could create interference to neighbors. The Commission should require public notice of such changes to ensure both broadcasters and the public service community are able to provide the services that the public has come to expect.

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The Association for Maximum Service Television, Inc. ("MSTV")[1/] and the National Association of Broadcasters ("NAB")[2/] hereby comment on the Commission's Second Notice of Proposed Rulemaking in the above-captioned docket (adopted Oct. 9, 1997, rel. Oct. 24, 1997) (the "Notice") which, among other things, discusses how to meet public safety communications needs and proposes technical

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1/ MSTV represents more than 330 local television stations on technical issues relating to the analog and digital television services and helped develop the methodology for allotting and assigning DTV channels.

2/ NAB is a non-profit, incorporated association of television and radio stations and broadcast networks that serves and represents the American broadcast industry.

requirements to protect broadcast licensees operating in the 746-806 MHz band (television channels 60-69) from interference.

In July, 1997, the Commission released a Notice of Proposed Rulemaking[3/] to determine how to reallocate the 746-806 MHz band to accommodate the needs of public safety while protecting existing and future broadcast television service. In the Reallocation Notice, the Commission proposed to allocate channels 63-64 and 68-69 for public safety use. MSTV and NAB filed comments, urging the Commission to allocate a contiguous block of spectrum on channels 66-69 for public safety use. A block allocation would maximize spectrum utility and better protect both broadcasters and land mobile services from interference.

By consolidating the spectrum allocated to public safety into one block, the Commission would increase flexibility to resolve interference problems, coverage shortfalls, and dislocations of low power and translator stations that will arise during the transition to digital television ("DTV"). A block allocation also would increase the utility of channels 60-65 after the transition by giving the Commission greater flexibility in reallocating this spectrum to broadband video services as well as narrowband services. MSTV and NAB reaffirm our belief that this approach will optimize spectrum efficiency and further congressional objectives.

3/ Reallocation of Television Channels 60-69, the 746-806 Band, Notice of Proposed Rulemaking, ET Docket No. 97-157 (rel July 10, 1997) (the "Reallocation Notice").

I. THE COMMISSION MUST IMPLEMENT TECHNICAL STANDARDS ADEQUATE TO PROTECT BROADCAST TELEVISION SERVICE

When Congress allocated 24 MHz in the 746-806 MHz band to public safety users, it indicated that broadcasters operating in that band must be protected from interference.[4/] Safeguarding existing free television service has long been a goal of the Commission as well.[5/] The 746-806 MHz band currently is used by nearly 100 television stations and also will be used for DTV during the transition. Implementing technical standards adequate to protect these stations is critical to meeting the Congressional mandate and furthering Commission policy to protect free over-the-air television.

A. Reducing Interference Protection To Broadcast Television Service Is Not Justified And Would Cause Losses In Service.

The land mobile and broadcast television service spectrum can productively share the 746-806 MHz spectrum band only if there are adequate standards

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4/ H.R. 2015, 105th Cong. § 3004 (1997) (enacted). The statute states:

> (d) CONDITIONS ON LICENSES. In establishing service rules with respect to licenses granted pursuant to this section, the Commission --
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> . . .
>
> (2) shall establish any additional technical restrictions necessary to protect full-service analog television service and digital television service during a transition to digital television service;
>
> . . .
>
> (4) shall establish rules insuring that public safety services licensees using spectrum reallocated pursuant to subsection (a)(1) shall not be subject to harmful interference from television broadcast licensees.

codified at 47 U.S.C. § 3337(d) (1997).

5/ See, e.g., Sixth Report and Order, FCC No. 97-115 ¶ 80 (Apr. 21, 1997), recon. pending; Reallocation Notice at ¶ 17.

to protect each service from interference. For over twenty-five years, broadcasters and land mobile licensees have been able to share spectrum effectively. The current sharing rules have minimized interference, maximized free television service, and created significant opportunities for land mobile. The Commission should not retreat from the standards that have made this possible.

1. Full Protection Is Necessary To Prevent Harmful Interference.

The Commission should implement rules for the 746-806 MHz band that ensure full protection, as it has for the 470-512 MHz band. The proposal contained in the Notice to set geographical spacing requirements based on a 40 dB D/U signal ratio at the 55 mile Grade B contour[6/] would set lower protection standards than those that currently protect television from land mobile interference in the 470-512 MHz band. The current UHF-TV - land mobile sharing rules codified in Part 90 (Subpart L) of the Commission's rules[7/] generally provide an appropriate benchmark for the 746-806 MHz band. There is one exception where the current rules are not adequate: stations operating within their full authorized power and antenna height, but produce a Grade B contour greater than 55 miles in radius.[8/] The Commission should protect these stations up to their existing contour.

Reducing the protection standard to a signal ratio of 40 dB D/U would create additional interference and create service losses at the fringe of the broadcast

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6/ Notice at ¶ 233.

7/ 47 C.F.R. §§ 90.301-90.317.

8/ See Notice at ¶ 238 & n. 405.

service area.[9/] MSTV and NAB recognize that a spacing requirement based on a 40 dB D/U signal ratio has been used for some stations in the New York City metropolitan area, but this is based on exceptional circumstances that do not necessarily exist across the country. This exception should not be the basis for a new rule applied to the general case.

MSTV and NAB agree with the proposal in the Notice that the Commission should define its protection criteria in a table. A table sets clear standards and is easily applied. Clarity is critical in an environment in which spectrum is shared by two different services.

2. The Commission Should Look To The Record It Has Already Developed For UHF-TV - Land Mobile Sharing.

The Commission considered weakening protection for broadcasters sharing spectrum with land mobile in the mid-1980s, but retained its stronger rules. In Gen Docket No. 85-172 on Further Sharing of the UHF television Band by Private Land Mobile Radio Services,[10/] the Commission considered whether a protection standard based on 40 dB D/U signal ratio at a 55 mile Grade B contour was appropriate to protect television broadcasts from co-channel land mobile operations.[11/] The Commission established a Technical Advisory Committee made up of three working groups and

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[9/] The Notice indicates the fundamental emissions from co-channel operations outside the Grade B contour would be limited to a predicted field strength of 24 dBuV/m at the Grade B contour with a 40 dB D/U standard. Notice at ¶ 239. This would create interference and a loss of service.

[10/] 2 FCC Rcd 6441 (1987).

[11/] Id. at ¶ 19 (cited in Notice at n. 398).

directed these subgroups to reach consensus. After extensive study of the proposal, the land mobile subgroup and the broadcast subgroup could not reach agreement. While the land mobile subgroup concluded that the protection criteria could be reduced, the broadcast subgroup determined that reducing the protection criteria would cause degradation in television service that would be unacceptable to viewers.[12/] To date the Commission has not diminished protection provided to broadcasters sharing with land mobile. MSTV and NAB believe the essential conclusion of that proceeding remains valid -- interference protection standards for television services should not be lowered.

3. Broadcasters In The 746-806 MHz Band Are Vulnerable To Interference And Require Adequate Protection During The Transition To Digital Television.

Broadcasters operating in the 746-806 MHz band are especially vulnerable to interference. Indeed, if there has been any change since the Commission established these rules in 1972 it is that UHF stations need greater protection from neighboring services than they did in 1972. Over the past twenty-five years, many stations have expanded the reach of their signals and consequently their vulnerability to interference. At the time the protection criteria were established, UHF television was an emerging service and stations transmitted at relatively low power. Although many of the stations on channels 60-69 have had some financial success, these stations remain the most vulnerable. Most do not have a major network affiliation and are not as well-positioned

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[12/] Land Mobile Radio/UHF Television Technical Advisory Committee Final Report, Executive Summary at 1 (May 7, 1986) (Executive Summary attached as Appendix A).

to compete in the increasingly competitive television market.[13/] A loss of viewers could have a devastating effect on these stations and may jeopardize their ability to make the transition to digital television. As it has in the past, the Commission should consider the unique circumstances in which these stations operate.[14/]

The Commission should not diminish current interference protection particularly since, as the Commission has noted, it is not clear what types of services, technologies, or system architectures may be used for new types of public safety services.[15/] While digital technology will be used much more frequently and reduce the necessary spectrum for traditional voice services, it is probable that public service organizations will seek to increase their technological capabilities to include video and two-way data services.[16/] Such services may require greater power and protection and could further degrade the television service.

13/ See Comments of MSTV and the National Association of Broadcasters to the First Notice at text accompanying n.21 (Sept. 15, 1997).

14/ See Fifth Report and Order, MM Docket No. 87-268 ¶¶ 76-86 (allowing smaller-market stations, independent stations and noncommercial stations more time than larger-market network affiliates to construct and implement DTV facilities).

15/ Notice at ¶ 232.

16/ See generally PSWAC, Final Report of the Public Safety Wireless Advisory Committee to the Federal Communications Commission and the National Telecommunications and Information Administration, 2 (Sept. 11, 1996) ("PSWAC Report").

B. The Commission Should Not Implement Protection Criteria For Digital Television Until Adequate Data Are Available.

1. There Are No Data On Which To Base Rules Protecting Digital Television.

Whereas the record on analog television service protection standards is well established, there is very little knowledge about the effect land mobile services will have on DTV and vice versa. There are simply insufficient data now to set interference protection criteria for digital television. Studies are necessary to ensure that the rules both adequately protect broadcasters and public safety users from interference and are spectrum-efficient. Going forward without adequate data will yield rules that are likely to be either under-protective or over-protective. If the rules are under-protective and there is interference, digital television transmissions will not be seen at all by some viewers. Unlike analog television, where the quality of the picture is gradually degraded by increased interference, a digital picture will disappear entirely once a certain level of interference occurs. If the rules are over-protective, valuable spectrum will be wasted and unavailable for use by public safety organizations.

2. A Committee Should Be Formed To Collect Data And Make Recommendations.

MSTV and NAB urge the Commission to create a committee comprised of representatives from all interested industries to gather laboratory and field data and make recommendations regarding protection standards for digital television so that such standards will be based on science, not speculation. The committee's mandate should be narrow and its life short. The committee could collect and analyze data and make

recommendations expeditiously. Once this work is complete, the committee should be disbanded.

The committee should be guided by the issues identified in this Notice. The impact of existing and potential public safety services on broadcasters must be considered. Protection criteria should be developed that clearly define the permissible power levels and interference level. The unique characteristics of this portion of the spectrum should be carefully considered. In short, the committee should examine these and other relevant issues in developing its recommendation.

C. Allocating One Larger Block Of Channels To Public Safety Is Most Efficient, And The Commission Should Tighten Its Enforcement Of Existing Television - Land Mobile Sharing Rules.

MSTV and NAB offer two additional recommendations to ensure the most efficient and effective interference protection standards. First, we reiterate our strong belief that allocating channels 66-69 rather than 63-64 and 68-69 for public safety services is a clearly preferable approach because a block allocation will maximize spectrum value and utility.[17/] A single block for public safety at channels 66-69 would reduce adjacencies, limiting the number of potential problems. Second, MSTV and NAB encourage the Commission to review its enforcement of the land mobile - television sharing rules. Sharing spectrum has worked well, but better enforcement would yield more effective use of shared spectrum now and in the future. The difficulty

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[17/] Comments on the Notice of Proposed Rulemaking Submitted by the Association for Maximum Service Television, Inc. and the National Association of Broadcasters, ET Docket No. 97-157 (September 15, 1997).

in resolving problems has deflected too many resources away from the primary missions of both broadcasters and land mobile licensees.

II. EFFICIENT USE OF THE SPECTRUM REQUIRES INCENTIVES TO IMPLEMENT ADVANCED TECHNOLOGY AND REQUIRES THE PARTIES TO INFORM EACH OTHER OF CHANGES IN SERVICE THAT MAY CAUSE INTERFERENCE.

Efficient use of the spectrum is critical to the development and growth of new communications services and the protection of existing services. This applies both to the public safety organizations and broadcasters that share channels 60-69. The Commission must create incentives to encourage the implementation of services that use the spectrum most efficiently, and a mechanism must be established to keep both broadcasters and land mobile services informed of developments that might raise interference concerns.

A. The Commission Should Create Incentives To Ensure The Efficient Use Of The 746-806 MHz Band.

The Commission has properly identified the need to ensure the efficient use of spectrum allocated to public safety agencies.[18/] Without incentives to maximize the value of the spectrum, the Commission and Congress again will have to find spectrum for public safety, thus reducing the availability of spectrum for new commercial services and technologies. The growing need for new public safety services need not lead to destructive shortages and disputes among competing services. A wide

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[18/] The Public Safety Wireless Advisory Committee also advocates efficient use of the spectrum. PSWAC Report at 3.

range of public safety services may use the spectrum as long as incentives are put in place to encourage use of the most efficient technologies.

The Commission should implement incentives that yield smaller spectrum needs for each of the four services (voice, data, image/HDS and video) identified in the Notice. A report prepared by Fox Ridge Communications (attached as Appendix B) has identified the following options to encourage efficient spectrum use:

(1) a licensee could not access new spectrum until equipment operating in existing spectrum meets a 6.25 kHz bandwidth equivalent standard;

(2) a licensee would have to turn in existing spectrum before being licensed in new spectrum, and then licensing would be for only 6.25 kHz equivalent technology;

(3) a licensee could gain exclusivity of an existing channel if the equipment was converted to 6.25 kHz bandwidth equivalent technology;

(4) a licensee on a conventional two-way channel not utilizing trunking, TDMA, single sideband, or other efficient technology would be relicensed as a secondary user of a channel; or

(5) a licensee would have to convert to a 6.25 kHz equivalent bandwidth equipment on a stated date.[19/]

It is particularly important to provide meaningful incentives to be spectrally efficient in the major metropolitan areas; otherwise, those areas are likely to demand unnecessarily large amounts of bandwidth over the next dozen years.

[19/] Options for Further Sharing of Television Channels Between the Public Safety Community and Television Broadcasters at 4.

B. A Mechanism Must Be Established To Ensure That All Parties Are Informed Of The Implementation Of New Services That Could Cause Interference.

The Commission must establish a mechanism to ensure that public safety services and broadcasters are aware of any significant changes in each other's technology or service in the 746-806 MHz band. Such changes may substantially affect sharing strategies. Different land mobile technologies (e.g. analog and digital) may have different interference characteristics and therefore varied effects on the video signal. New technologies that use different modulation schemes than are currently used may increase the likelihood for interference and loss of service. Each user of the spectrum should be required to give notice before implementing major changes in technology or facilities. In addition, notice is necessary to ensure that broadcasters are no longer using the 746-806 MHz band at the end of the DTV transition. To provide a structure for such notice, the Commission should require broadcasting and land mobile services to file with the Commission periodic status reports regarding the implementation of these facilities. The plans should be published and interested parties should be given time to review them, and, where appropriate, object to the implementation of a new service if it will cause interference. By making an objection before the service is put in place, the service could be modified so that it complies with Commission interference rules. Adequate notice will go far in preventing interference from occurring.

III. CONCLUSION

Establishing adequate technical interference protection standards is critical to ensuring that broadcasters and public safety agencies operate effectively during the

transition to digital television. The current rules protecting UHF television and land mobile in the 470-512 MHz band provide an appropriate benchmark for establishing rules for the 746-806 MHz band, and the Commission should not weaken the protection provided to broadcast services. Technical protection standards for digital television must be based on scientific data, which should be developed by a committee created to collect data and make recommendations before the Commission adopts technical protection standards. Finally, incentives must be put in place to ensure that the spectrum is used most efficiently. By taking these steps the Commission will further the public interest.

Respectfully submitted

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December 22, 1997

APPENDIX A

Before the

Federal Communications Commission

Washington, D.C. 20554

In the Matter of	)	
	)	Gen. Docket No. 85-172
Further Sharing of the UHF	)	
Television Band by Private	)	RM-3975
Land Mobile Radio services.	)	RM-4829

Land Mobile Radio/UHF Television Technical Advisory Committee

FINAL REPORT

May 7, 1986

II. EXECUTIVE SUMMARY

Separate reports were prepared by land mobile and broadcast representatives covering the activities and conclusions of the Technical Analysis and the Sharing Plan Review and Recommendations Working Groups. Accordingly, separate Executive Summaries of these reports follow.

II.A EXECUTIVE SUMMARY - LAND MOBILE

The Commission proposed further UHF-TV/land mobile sharing by protecting UHF television stations operating co-channel and first adjacent channel to land mobile systems. In both cases, land mobile stations would be restricted to operation outside the protected UHF-TV station Grade B contour, with a required desired-to-undersired (D/U) field strength ratio of 40 dB for co-channel and 0 dB for adjacent channel. This would be only a slight change in the present land mobile/UHF-TV sharing plan used in the field today for 470-512 MHz.

After approximately 9 months of further study by TAC the Commission's proposed protection plan was found to be a reasonable basis for further land mobile/UHF-TV sharing, for the following reasons:

- Sharing has existed for over a decade with no record of interference to television viewing.

- Existing test data support the Commission's use of 45 dB as an appropriate D/U protection ratio for co-channel signals at the television receiver terminals.

- Various reports examined by the Technical Analysis Working Group suggest that the Commission's use of

an antenna discrimination/polarization of 10 dB is conservative and that 20 dB may be used as a realistic planning factor.

- The Commission's proposed 40 dB D/U ratio at the Grade B contour for co-channel stations is supported by previous work, and any increase in potential interference over the present land mobile/TV sharing is small.

- The Commission's proposed 0 dB D/U ratio at the Grade B contour for first adjacent stations is supported by studies examined and conducted by the Technical Advisory Working Group.

- Analysis of the potential for interference on all channel spacings other than co-channel and first adjacent channels shows that it is extremely small.

- Analysis indicates that television interference to land mobile licensees or to other television use is much greater than that which might result from land mobile operation to television reception.